USER GUIDE FOR NETmc MARINE ***videoTXT***

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1. Introduction

NETmc Marine's ***videoTXT*** is a robust solid state overlay unit – capable of overlaying text onto PAL or NTSC video signals. The ***videoTXT*** will detect which type of signal is present automatically. Note that if no signal is detected, the ***videoTXT*** will default to PAL settings.

Housed in a 1U rack mount case – the ***videoTXT*** is capable of placing text on up to 4 separate unsynchronised video signals. Data can be input via PS2 keyboard or serial port.
The ***videoTXT*** is able to decode and display some equipment specific strings (GPS units / ROV controllers etc). Contact NETmc Marine Support to discuss how to get your equipment on the supported list.

Up to 1656 characters* can be displayed on the screen in 4 selectable font sizes and 9 selectable font shades. (*small font 1656 PAL, 1380 NTSC)

The ***videoTXT*** has an internal real time clock (RTC) – which allows time and date to be displayed on the screen without being fed from an external source.

The firmware can be updated in situ via serial port 2. Please contact NETmc Marine Support for more details.

Available models:
- Single Video channel unit
- Dual Video channel unit
- Triple Video channel unit
- Quadruple Video channel unit

Options (available with all models):
- Analogue interface settings
- Additional (third) serial port
- LAN (local area network) option

NOTE: The third serial port is active only if this additional option has been purchased. Any data input to this third serial port is restricted to the bottom half of the screen.

Upon powering-up the ***videoTXT*** the following screen is displayed, confirming which model is present (single, dual, triple or quadruple channel) and which firmware version the unit is using.

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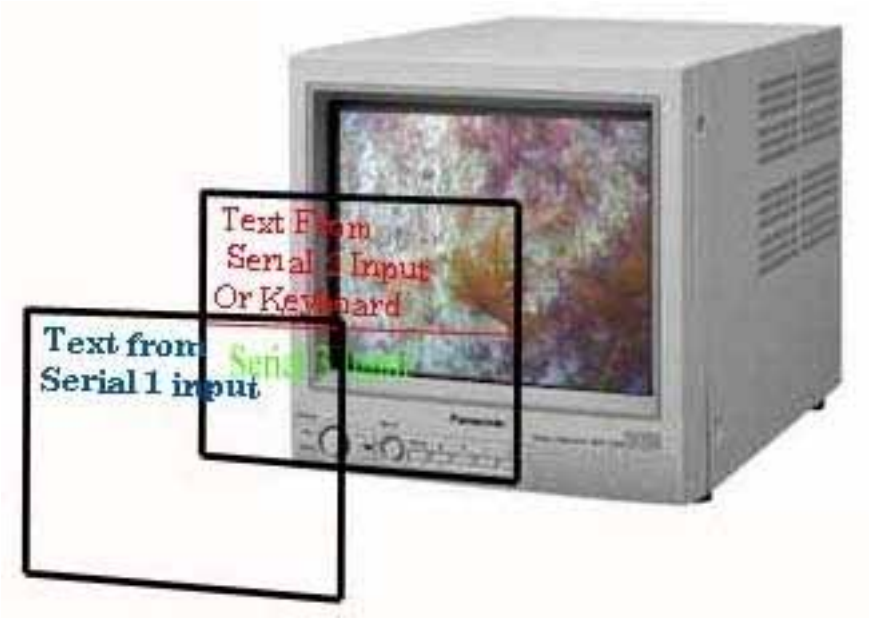
2. Rear connections

Rear panel for units with LAN option

External data feeds from a navigation or inspection package (e.g. Eiva / QPS / Starfix / Coabis / Pisys etc) can be connected to Serial 1, Serial 2 or Serial 3 (if this option has been purchased).

A typical / recommended set-up would be:
Serial 1: Navigation data / custom string
Serial 2: Inspection component ident
Serial 3: CP value

The serial inputs are 100% independent, each functions as if it were a transparent screen sized text area laid on top of each video channel – so a “clear screen” command sent on Serial 2 will not delete any text being fed from Serial 1 (see diagram below).



NOTE: The keyboard and internal clock output to the same overlay layer as Serial 2: therefore if the keyboard and/or internal clock are to be used, avoid any external inputs to Serial 2.

If the Serial 3 option has been purchased, Serial 2 and 3 inputs share the same layer: Serial 2 uses the top half of the screen, Serial 3 the bottom half.

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When making a cable to link between ***videoTXT*** and a PC – this should be a cross over (null modem) configured as:

PC	videoTXT
2	3
3	2
5	5

Data should be sent to the ***videoTXT*** as:

9600 Baud
8 bit
No parity
1 stop bit

Note: THIS EQUIPMENT MUST BE EARTHED.

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3. Serial Command Index - for input via the serial port.

The ***videoTXT*** command structure follows the established industry standards. A summary of the commands follows:

Compatibility with Taylor Lann / C-Systems

Function	Hex Code	Dec Code	Key Code
Clear Screen	10	16	^P
Cursor Right	11	17	^Q
Cursor Up	12	18	^R
Cursor Down	13	19	^S
Cursor Left	14	20	^T
Home Cursor	15	21	^U
Line Feed	0A	10	^J
Carriage return	0D	13	^M

If your videoTXT is set for use with more than one channel please note the following:

- The default setting is: All channels on. Serial commands will apply to all video channels.

- Hex code 7 / decimal code 7 is used to determine which video channel(s) serial input will be sent to. This command can be issued on both serial port one and serial port two and acts independently for each. i.e. the serial input can be sent through serial port one to one video channel or a combination of channels, and a different serial input can be sent through serial port two to a different video channel (or combination of channels.)

- For all settings, two bytes need to be sent: 7 followed by another digit to select which video channel(s) should apply. Any combination of channels can be selected as indicated below by adding the digits for each channel:

To send to:

- video channel 1 only: Send 7 followed by 1.
- video channel 2 only: Send 7 followed by 2.
- video channel 3 only: Send 7 followed by 4.
- video channel 4 only: Send 7 followed by 8.

To send to two channels:

- channel 1 and 2: Send 7 followed by 3.
- channel 1 and 3: Send 7 followed by 5
- channel 1 and 4: Send 7 followed by 9
- channel 2 and 3: Send 7 followed by 6
- channel 2 and 4: Send 7 followed by 10
- channel 3 and 4: Send 7 followed by 12

To send to three channels:

- channels 1, 2 and 3: Send 7 followed by 7.
- channels 1, 2 and 4: Send 7 followed by 11
- channels 1, 3 and 4: Send 7 followed by 13
- channels 2, 3 and 4: Send 7 followed by 14

To disable all video channels: Send 7 followed by 0.

- If you have a triple-channel overlay, the on/off state of video channel 4 will be ignored.
- If you have a dual-channel overlay, the on/off state of video channels 3 and 4 will be ignored.
- If you have a single-channel overlay, the on/off state of video channels 2, 3 and 4 will be ignored.

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Compatibility with Oceantools Systems

Function	Subfunction	Hex Code	Dec Code	Key Code
Clear Screen	n/a	10	16	^P
Cursor Right	n/a	11	17	^Q
Cursor Up	n/a	12	18	^R
Cursor Down	n/a	13	19	^S
Cursor Left	n/a	14	20	^T
Home Cursor	n/a	15	21	^U
Line Feed	n/a	0A	10	^J
Carriage return	n/a	0D	13	^M
Time * (2 bytes must be sent – e.g. 00 followed by parameter)		00	0	
	Set time to Top Centre	01	1	
	Set time to Bottom Centre	02	2	
	Set time to Top Left	03	3	
	Set time to Top Right	04	4	
	Set time to Bottom Left	05	5	
	Set time to Bottom Right	06	6	
	Set time to Off	00	0	
Date * (2 bytes must be sent – e.g. 01 followed by parameter)		01	1	
	Set date to Top Centre	01	1	
	Set date to Bottom Centre	02	2	
	Set date to Top Left	03	3	
	Set date to Top Right	04	4	
	Set date to Bottom Left	05	5	
	Set date to Bottom Right	06	6	
	Set date to Off	00	0	
Font (2 bytes must be sent – e.g. 09 followed by parameter)		09	9	^I
	Set font to small	01	1	^A
	Set font to medium	02	2	^B
	Set font to large	03	3	^C

* Serial port 2 only
Neither Time, Date or Font changes are supported on Serial port 3.

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4. Keyboard Command Index

The keyboard must be connected to the front of the ***videoTXT*** prior to power-up.

The ***videoTXT*** is designed to work with any PS2 keyboard. A USB keyboard used via a PS2 adapter should also work but designs vary and so NETmc Marine cannot guarantee this.

Text can be drawn on the screen by typing on the keyboard in the regular manner.
Caps Lock and Shift keys are supported for capital letters and punctuation characters.

Select the position on the screen where the text should appear by using the arrow keys.

Backspace is used to erase text

F keys: shortcut keys (see summary below)

ESC takes the user out of the menu system.

Scratch mode
Upon first powering up the unit, “scratch” mode is entered. Text will be displayed on the screen as typed into the keyboard. This text is lost if any other command is carried out (for example entering the menu system) or if the ***videoTXT*** is switched off.

The font size and shade, and offset settings can be altered using the menu system (via F1) – see below.

The default setting upon power up is that this text is displayed on all video channels. Text can be disabled from any one or more channels by using shortcut key commands (see below).

NOTE: In scratch mode (and in this mode only) the “Insert” function on the keyboard has had to be disabled.

Stored text
Four different pages of text can be stored for future use. These are activated by the use of the F5, F6, F7 and F8 shortcut keys.

To set up your stored text:
1: select the text size required using the Control Menu option 3.
2: select the required shortcut key (F5 or F6 or F7 or F8)

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3: type in the text required.
The text is recorded automatically and is displayed every time the same shortcut key is pressed. Even if the ***videoTXT*** is powered off, the text is stored.

It is possible to have different text shades and sizes on each page. These are chosen through the menu system. (Select F4 to return to scratch mode and then F1 to enter the menu system – see below for more details.)

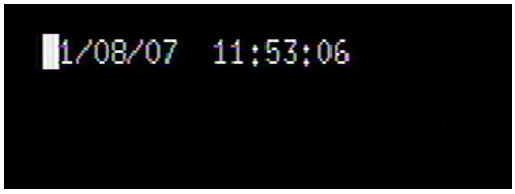
NOTE: changing the text size on a stored page also deletes the text on that page. Changing the text shade can be carried out at any time (before or after the text has been created).

Channel titles:
A short title can be set up for display on each video channel in use. For example, when a triple channel ***videoTXT*** is in use, the user could display “Diver 1” on the first video channel, “Diver 2” on the second video channel and “Diver 3” on the third video channel. Channel titles are also retained if the ***videoTXT*** is powered off.

NOTE: On a single channel overlay only the first title is displayed.

To set up channel titles use option 5 of the Control menu. (See below for more details).

Cursor position:
The cursor flashes at its current position to facilitate keyboard use. This may be on top of time/date (as in the example below) or some text. If the keyboard is not used, the flashing cursor will disappear after approximately 10 seconds.



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Summary of shortcut key commands:

F1: Brings up the Control Menu (see below for more details). Note: This key only functions when in scratch mode.
F2: Clears the display; if on a stored page, the page memory will also be cleared.
Shift-F2: Clears only the Serial Port 1 display.
F3: Enables/disables the Serial Port 1 display.
F4: Selects scratch page (freestyle, volatile text)
F5: Selects stored page 1
F6: Selects stored page 2
F7: Selects stored page 3
F8: Selects stored page 4
Ctrl-F5: Clears stored page 1 (Note: This and the next 3 key commands can be used whichever page the user is currently on.)
Ctrl-F6: Clears stored page 2
Ctrl-F7: Clears stored page 3
Ctrl-F8: Clears stored page 4
Ctrl-1: Enables/disables the display of keyboard input on video channel 1
Ctrl-2: Enables/disables the display of keyboard input on video channel 2
Ctrl-3: Enables/disables the display of keyboard input on video channel 3
Ctrl-4: Enables/disables the display of keyboard input on video channel 4
Ctrl-I: Inserts an empty row at the current cursor position
Ctrl-D: Deletes the row at the current cursor position
Insert: Toggles between overstrike and insert modes (only available when on a stored page)
Delete: Deletes the character underneath the cursor (only available when on a stored page) and moves the remainder of the row to the left.
Backspace: Deletes the character to the left of the cursor; if on a stored page, this key moves the remainder of the row to the left
Return: Begins a new line on the display
Cursor keys: Move the cursor in the direction of the arrows.
Page up: Moves the cursor to the upper left of the screen
Page down: Moves the cursor to the lower right of the screen
Home: Moves the cursor to the start of the current row
End: Moves the cursor to the end of the current row

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5. Menu Structure

The user can enter the menu system by pressing F1, whilst in scratch mode.

Control menu
1: Help pages
2: Time and date settings
3: Text size and area settings
4: Text shade settings
5: Channel title settings
6: Display offset settings
7: Serial port settings
8: String parser settings
9: Analogue interface settings

NOTE: The example shows a screen where no input signal is connected. If a signal is connected the menu will be displayed over this signal.

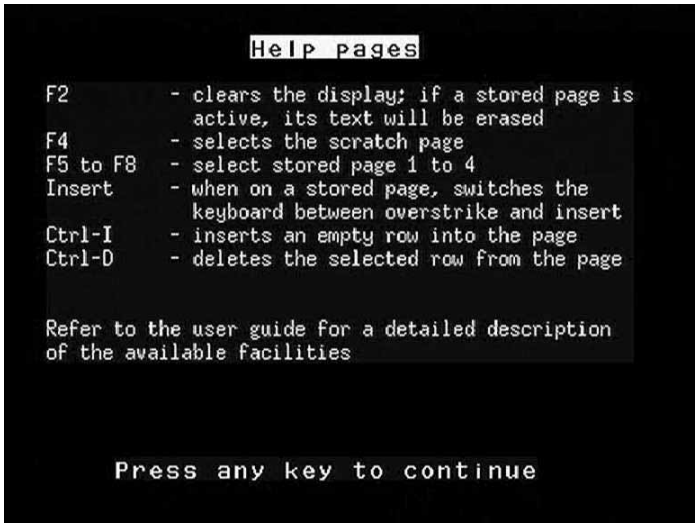
In each menu, type the appropriate number to select that option. Press the Escape key to return to normal display.

Note that the menu options are dependent on the model of ***videoTXT*** that has been chosen. Menu option 9: Analogue interface settings will only be shown if this option has been purchased with your ***videoTXT***.

The menu options are described below, with screen shots of the pages the user can expect to see.

5.1: Help

This option contains some basic operational and setup tips


Help pages
F2 - clears the display; if a stored page is active, its text will be erased
F4 - selects the scratch page
F5 to F8 - select stored page 1 to 4
Insert - when on a stored page, switches the keyboard between overstrike and insert
Ctrl-I - inserts an empty row into the page
Ctrl-D - deletes the selected row from the page
Refer to the user guide for a detailed description of the available facilities
Press any key to continue

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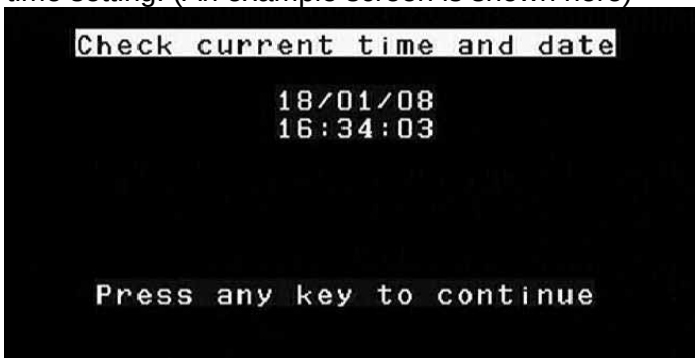
5.2: Time / Date Settings

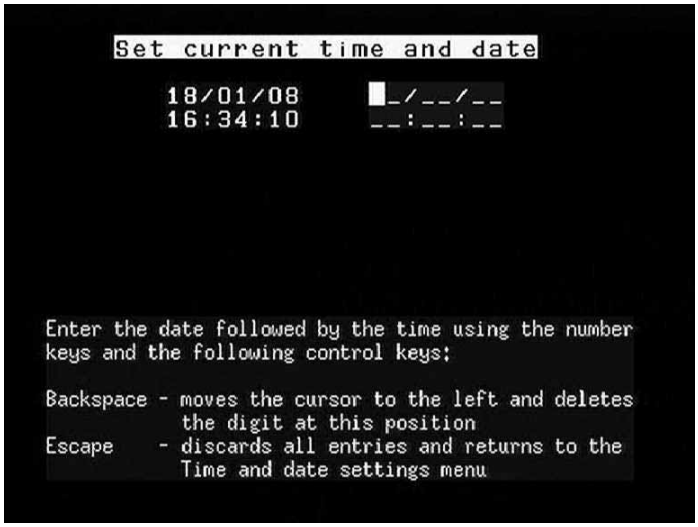
Use this menu to change the time on the internal clock, or to change the position of the time and date on screen. It is also possible to select either UK or US date format and synchronise the time with GPS:

Time and date settings
1: Check current time and date
2: Set current time and date
3: Select date format
4: Select current time zone
5: Sync time with NMEA (xxGGA)
6: Sync time with NMEA (xxRMC)
7: Time and date display settings

Option 1: Check current time setting. (An example screen is shown here)



Option 2: Set current time and date


Set current time and date
18/01/08
16:34:10
__/__/__
__:__:__
Enter the date followed by the time using the number keys and the following control keys:
Backspace - moves the cursor to the left and deletes the digit at this position
Escape - discards all entries and returns to the Time and date settings menu

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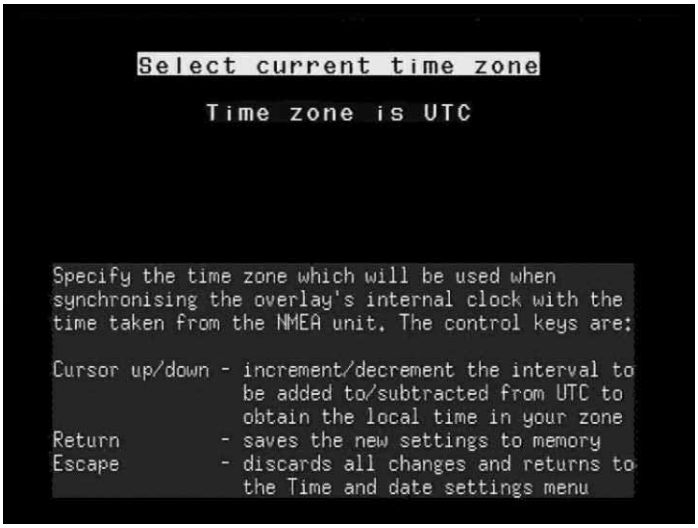
Option 3: Select date format

Once a format has been selected, the user will see a screen similar to the one below:

Select date format
1: Select UK format (dd/mm/yy)
2: Select USA format (mm/dd/yy)
Selected date format is UK
Press Return to accept the changes
Press Escape to cancel

Option 4: Select current time zone.

This will be necessary if you wish to synchronise the time with a GPS signal. Examples are shown below.


Select current time zone
Time zone is UTC
Specify the time zone which will be used when synchronising the overlay's internal clock with the time taken from the NMEA unit. The control keys are:
Cursor up/down - increment/decrement the interval to be added to/subtracted from UTC to obtain the local time in your zone
Return - saves the new settings to memory
Escape - discards all changes and returns to the Time and date settings menu

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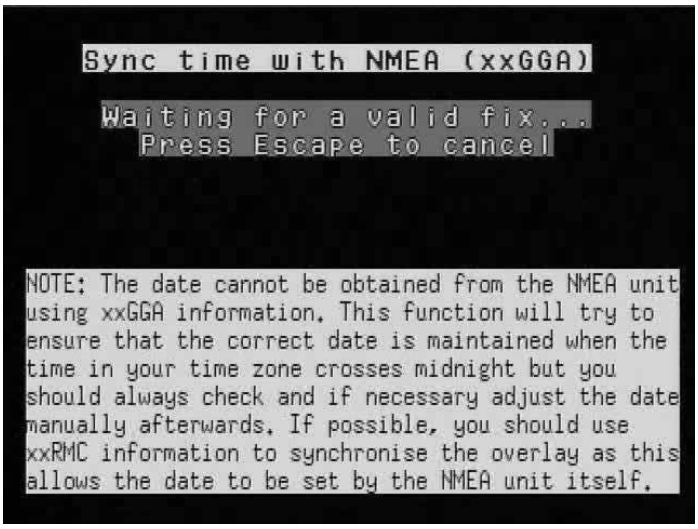
Option 5: Sync time with NMEA (xxGGA)

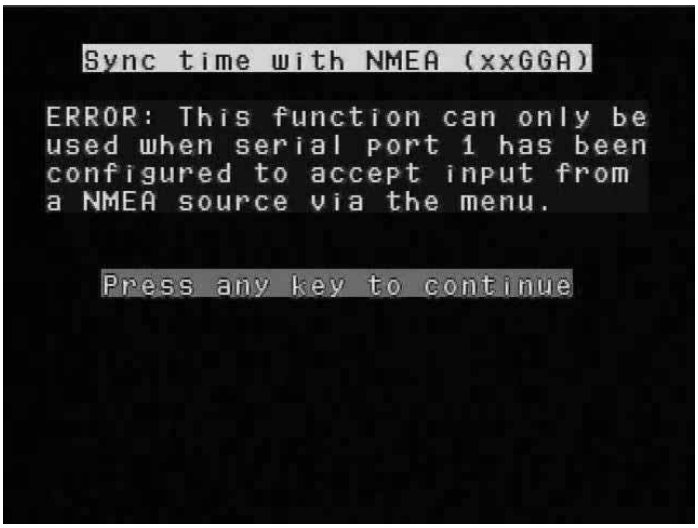
It may be desirable to have the internal clock in the overlay synchronised with a GPS receiver - to ensure information displayed on the overlay matches the survey position time.

With an NMEA string at 4800 baud being input to serial 1 of the overlay, and the String Parser settings enabled (see section 5.7) the steps below will enable time sync.

Notes on the 2 GPS systems: the GGA signal is available almost everywhere but the signal carries only the time and not the date, therefore the date may need to be correctly manually. The RMC signal carries both the date and the time, but depending on the location of the vessel, may not be available.


Sync time with NMEA (xxGGA)
Waiting for a valid fix...
Press Escape to cancel
NOTE: The date cannot be obtained from the NMEA unit using xxGGA information. This function will try to ensure that the correct date is maintained when the time in your time zone crosses midnight but you should always check and if necessary adjust the date manually afterwards. If possible, you should use xxRMC information to synchronise the overlay as this allows the date to be set by the NMEA unit itself.

If the following message appears the string parser settings may need to be adjusted: return to Option 7 of the Control Menu.


Sync time with NMEA (xxGGA)
ERROR: This function can only be used when serial port 1 has been configured to accept input from a NMEA source via the menu.
Press any key to continue

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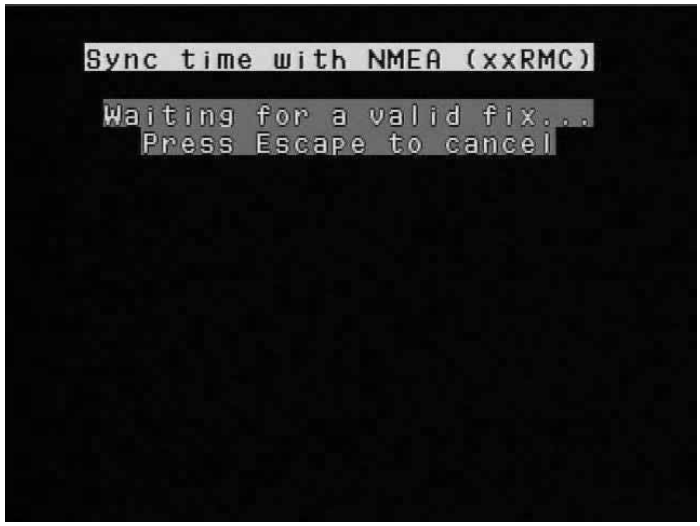
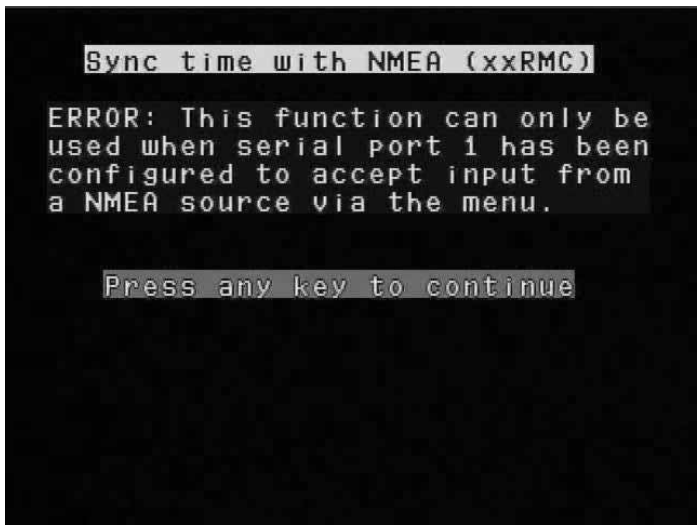
Option 6: Sync time with NMEA (xxRMC)



If the following message appears the string parser settings may need to be adjusted: return to Option 7 of the Control Menu.


Sync time with NMEA (xxRMC)
ERROR: This function can only be used when serial port 1 has been configured to accept input from a NMEA source via the menu.
Press any key to continue

Option 7: Time and date display settings
Time and date can be displayed in different positions on the scratch and on each of the four stored pages.

Time and date display settings
1: Settings for scratch page
2: Settings for stored page 1
3: Settings for stored page 2
4: Settings for stored page 3
5: Settings for stored page 4

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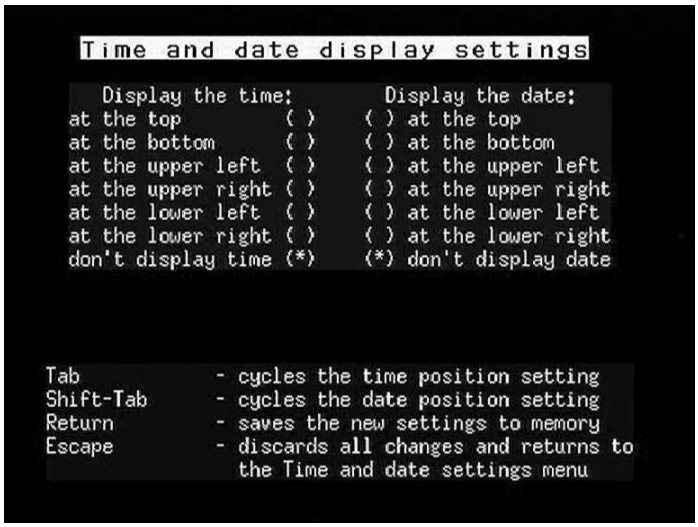
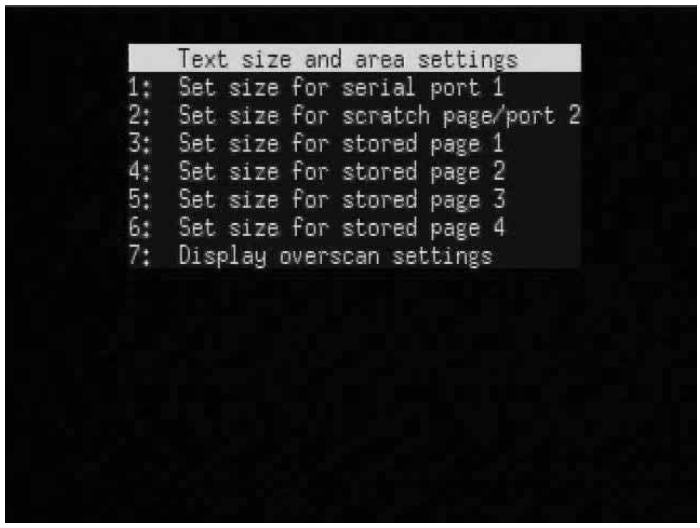

Time and date display settings
Display the time:
at the top ( )
at the bottom ( )
at the upper left ( )
at the upper right ( )
at the lower left ( )
at the lower right ( )
don't display time (*)
Display the date:
( ) at the top
( ) at the bottom
( ) at the upper left
( ) at the upper right
( ) at the lower left
( ) at the lower right
(*) don't display date
Tab - cycles the time position setting
Shift-Tab - cycles the date position setting
Return - saves the new settings to memory
Escape - discards all changes and returns to the Time and date settings menu

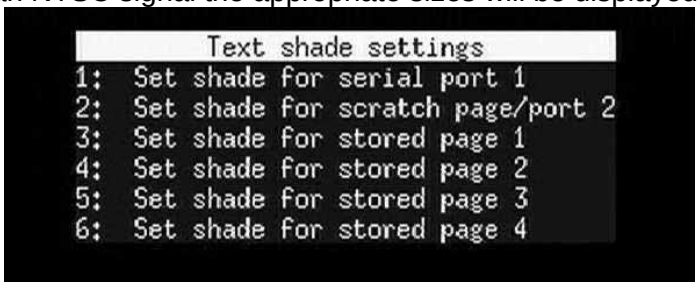
5.3. Text size and area settings

It is possible to set different text sizes for the scratch page and for each of the four stored pages:

NOTE: Changing the text size on a stored page also deletes the text on that page. Therefore it is important to choose the text size first and then set up the page with the required text.


Text size and area settings
1: Set size for serial port 1
2: Set size for scratch page/port 2
3: Set size for stored page 1
4: Set size for stored page 2
5: Set size for stored page 3
6: Set size for stored page 4
7: Display overscan settings

Choose which page you wish to set the text size for, then select the size required from the options below: If you are using an NTSC signal the appropriate sizes will be displayed for this signal.)


Text shade settings
1: Set shade for serial port 1
2: Set shade for scratch page/port 2
3: Set shade for stored page 1
4: Set shade for stored page 2
5: Set shade for stored page 3
6: Set shade for stored page 4

For reference, the four sizes available are:

		PAL	NTSC
Small font:	69 columns	24 rows	20 rows
Default font:	52 columns	19 rows	16 rows
Medium font:	34 columns	19 rows	16 rows
Large font:	32 columns	7 rows	6 rows

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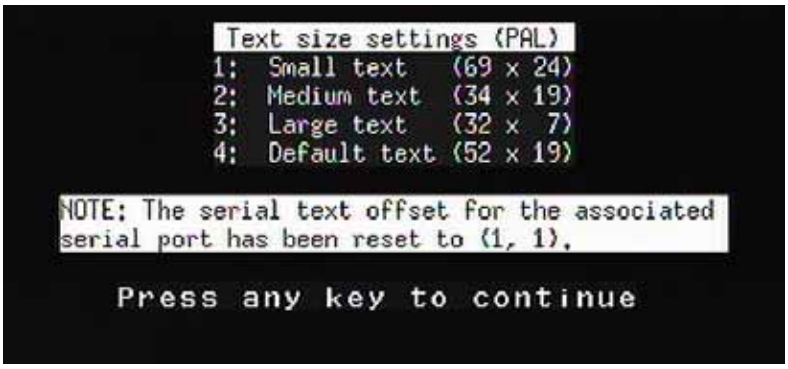
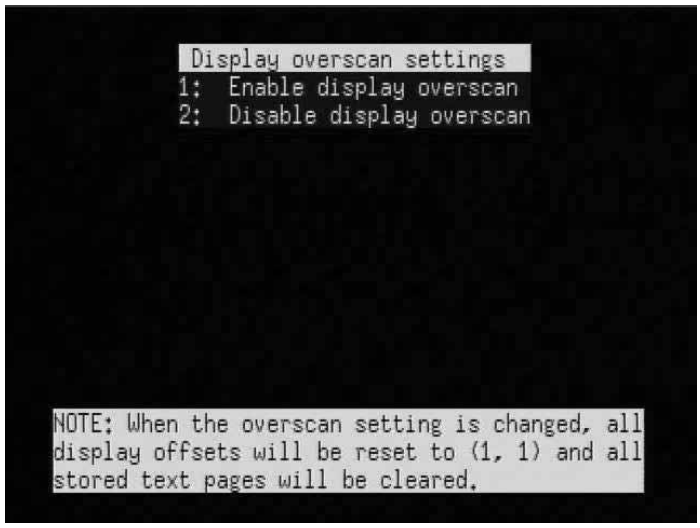
NOTE: Changing the text size will also affect the position of any offset that has been set. For this reason if the text size is changed, the following message will be displayed and the offset position is reset to (1,1) so that the user can re-choose the optimum position. See section 6 below.


Text size settings (PAL)
1: Small text (69 x 24)
2: Medium text (34 x 19)
3: Large text (32 x 7)
4: Default text (52 x 19)
NOTE: The serial text offset for the associated serial port has been reset to (1, 1).
Press any key to continue

Option 7: Display overscan settings


Display overscan settings
1: Enable display overscan
2: Disable display overscan
NOTE: When the overscan setting is changed, all display offsets will be reset to (1, 1) and all stored text pages will be cleared.

What is overscan?

Early monitors / televisions varied in their displayable area because of manufacturing tolerance problems. There were also effects from the early design limitations of linear power supplies, whose DC voltage was not regulated as well as in later switching-type power supplies. This would cause the image to shrink when AC power 'browned out', as well as a process called blooming, where the image size increased slightly when a brighter overall picture was displayed. Because of this, TV producers could not be certain where the visible edges of the image would be. In order to cope with this, they defined three areas:

Title safe: An area visible by all reasonably maintained sets, where text was certain not to be cut off.
Action safe: A larger area that represented where a "perfect" set (with high precision to allow less overscanning) would cut the image off.
Overscan: The full image area to the electronic edge of the signal.

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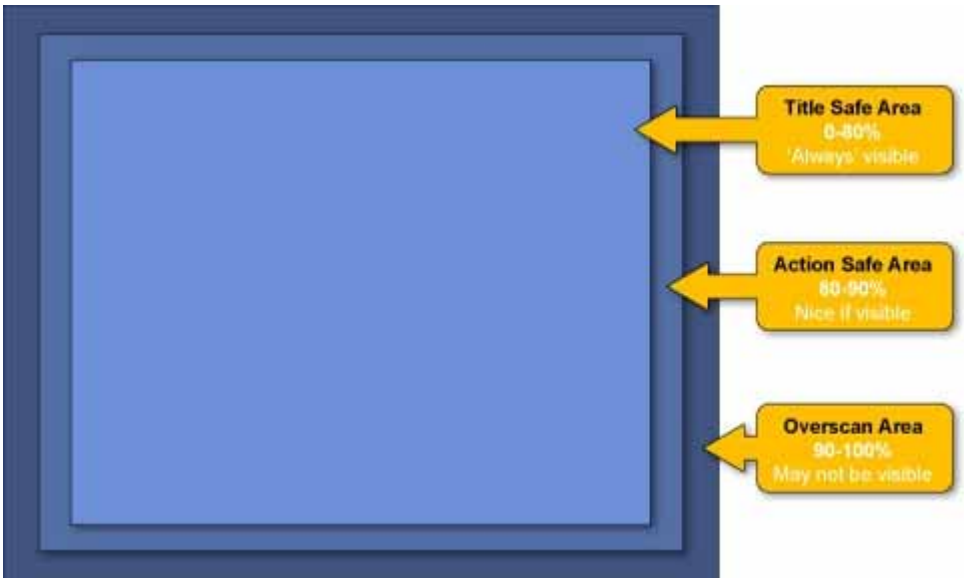

Modern LCD monitors don't suffer from the same problems which created the need for overscan in the first place - so under normal settings, users may feel that there is wasted area around the screen which the overlay text cannot reach.

For this reason, an option has been created to enable the overscan region, effectively allowing the text to write over a larger area.

It should be noted that if overscan is enabled, all the overlaid text may not be visible if CRT monitors are used.

When overscan is enabled, the screen area available to the overlay increases (annotated as PAL+ and NTSC+) - making the number of characters on each row and column:

Text size settings (PAL+)
1: Small text (80 x 27)
2: Medium text (40 x 21)
3: Large text (36 x 7)
4: Default text (60 x 21)
NOTE: When the text size is changed using this option, the display offset for serial ports 2 and 3 as well as the scratch page will be reset to (1, 1).

With overscan enabled, the four sizes available are:

		PAL	NTSC
Small font:	80 columns	27 rows	23 rows
Default font:	60 columns	21 rows	17 rows
Medium font:	40 columns	21 rows	17 rows
Large font:	36 columns	7 rows	6 rows

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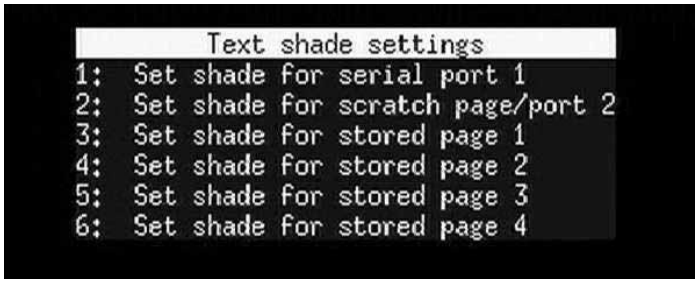
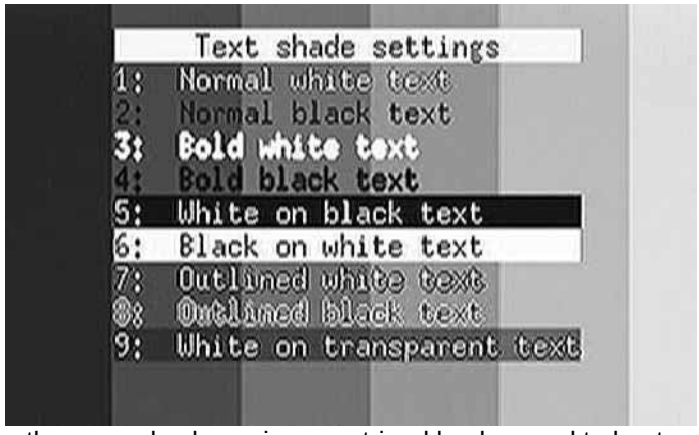
5.4: Text shade settings.

Separate shades can be selected for the scratch and each of the four stored pages.


Text shade settings
1: Set shade for serial port 1
2: Set shade for scratch page/port 2
3: Set shade for stored page 1
4: Set shade for stored page 2
5: Set shade for stored page 3
6: Set shade for stored page 4

Examples of the 9 text shades available are shown overleaf:


Text shade settings
1: Normal white text
2: Normal black text
3: Bold white text
4: Bold black text
5: White on black text
6: Black on white text
7: Outlined white text
8: Outlined black text
9: White on transparent text

Note: the example shown is on a striped background to best display the range of shades in this printed manual.

When the number corresponding to each text shade is typed, the relevant font shade is immediately shown on screen. Some examples of these fonts shown over a video signal are as follows:

1. Normal white text

4. Bold black

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5. White on black background

6. Black on white background

7. Outlined white text

8. Outlined black text

9. White on transparent

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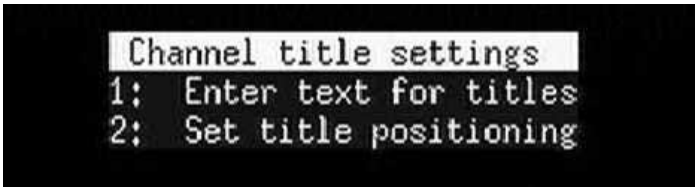
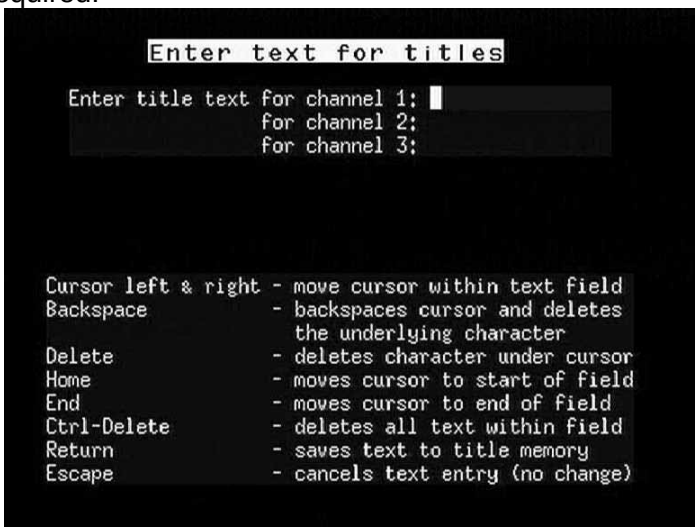
5.5: Channel title settings

This option enables brief titles to be set up which will be displayed on each separate screen.

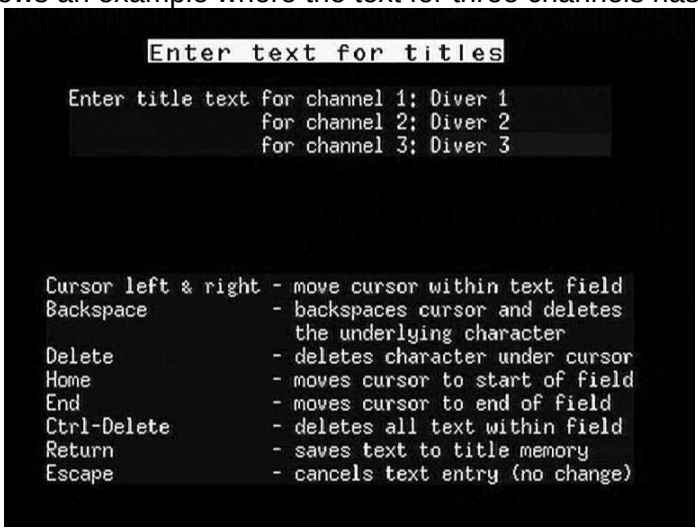
NOTE: All 4 titles will only be displayed when a quad channel overlay is in use. With a single channel overlay, only the first title (text one) will be displayed; with a dual channel overlay only texts one and two are displayed, with a triple channel overlay texts one, two and three are displayed.



Option 1: Enter text for titles
Simply type in the text required.


Enter text for titles
Enter title text for channel 1:
for channel 2:
for channel 3:
Cursor left & right - move cursor within text field
Backspace - backspaces cursor and deletes the underlying character
Delete - deletes character under cursor
Home - moves cursor to start of field
End - moves cursor to end of field
Ctrl-Delete - deletes all text within field
Return - saves text to title memory
Escape - cancels text entry (no change)

The following screen shows an example where the text for three channels has been entered:


Enter text for titles
Enter title text for channel 1: Diver 1
for channel 2: Diver 2
for channel 3: Diver 3
Cursor left & right - move cursor within text field
Backspace - backspaces cursor and deletes the underlying character
Delete - deletes character under cursor
Home - moves cursor to start of field
End - moves cursor to end of field
Ctrl-Delete - deletes all text within field
Return - saves text to title memory
Escape - cancels text entry (no change)

To delete the title on any video channel, simply delete the text for the relevant channel on the above menu screen. In the example below no title has been set for video channel 1:

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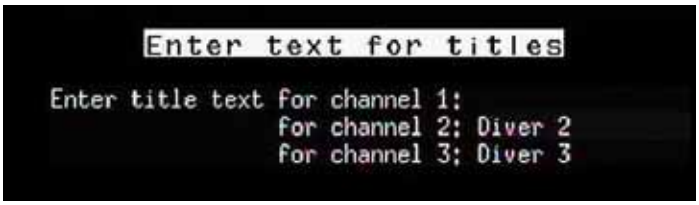
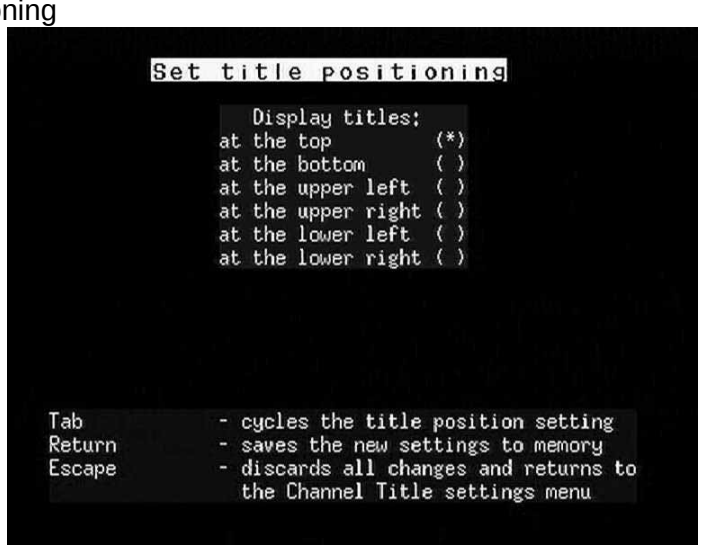
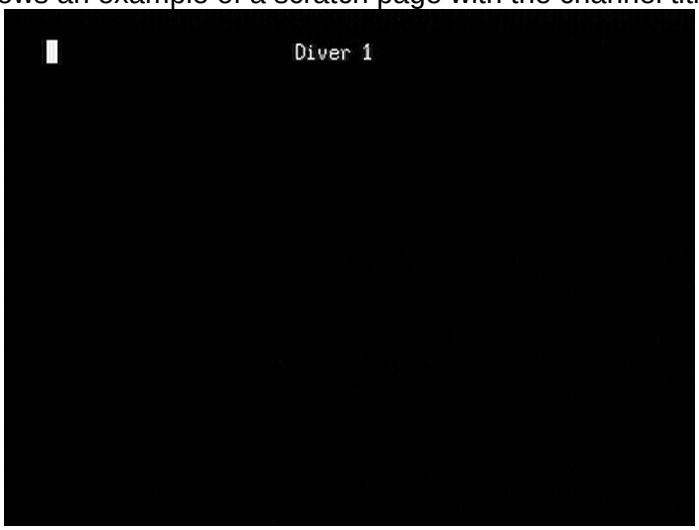


Option2: Set title positioning


Set title positioning
Display titles:
at the top (*)
at the bottom ( )
at the upper left ( )
at the upper right ( )
at the lower left ( )
at the lower right ( )
Tab - cycles the title position setting
Return - saves the new settings to memory
Escape - discards all changes and returns to the Channel Title settings menu

The following screen shows an example of a scratch page with the channel title enabled.



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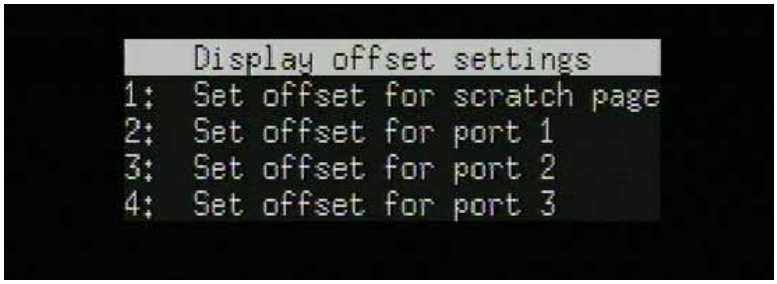
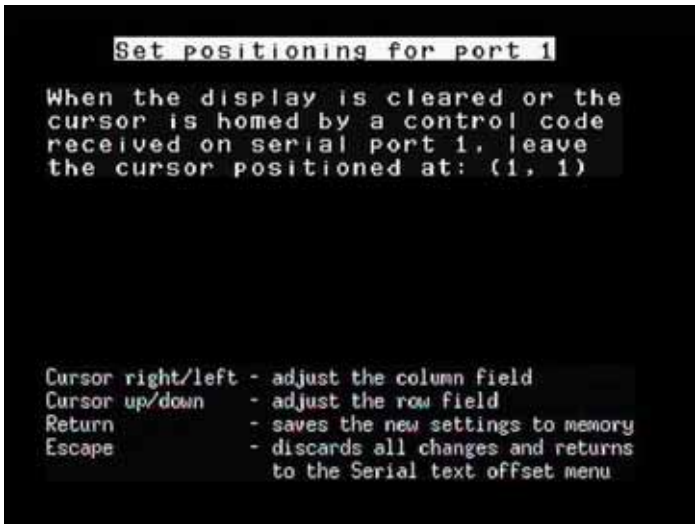
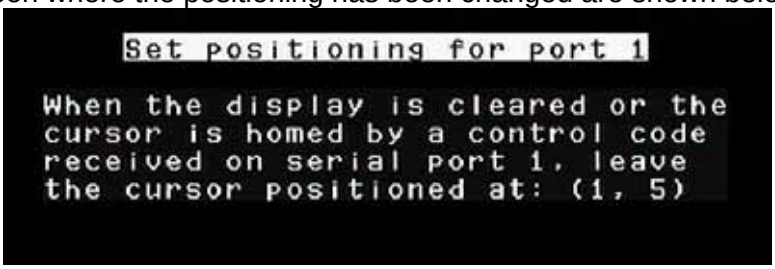
5.6: Display offset settings

This option enables the user to position the text being sent to the ***videoTXT*** via the serial ports. This is useful if you cannot change how your serial string device outputs its data. The offset for the scratch page can also be set here.




Set positioning for port 1
When the display is cleared or the cursor is homed by a control code received on serial port 1, leave the cursor positioned at: (1, 1)
Cursor right/left - adjust the column field
Cursor up/down - adjust the row field
Return - saves the new settings to memory
Escape - discards all changes and returns to the Serial text offset menu

Examples of this screen where the positioning has been changed are shown below:


Set positioning for port 1
When the display is cleared or the cursor is homed by a control code received on serial port 1, leave the cursor positioned at: (1, 5)

Set positioning for port 1
When the display is cleared or the cursor is homed by a control code received on serial port 1, leave the cursor positioned at: (5, 1)

NOTE: If the text size is changed, the offset will be returned to the default (1,1) position. This is because changing the text size will alter the available number of rows / columns, which may result in the previously saved offset becoming invalid.

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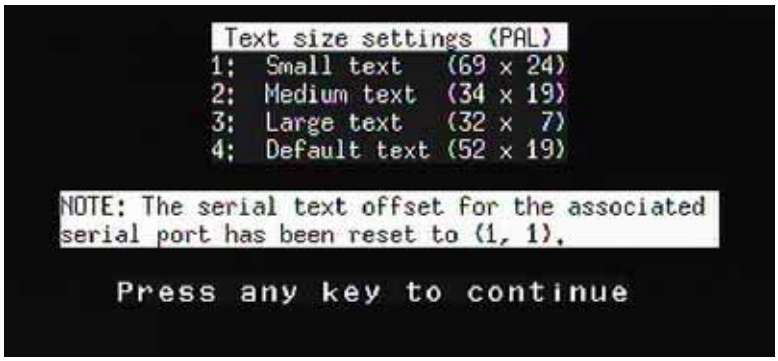
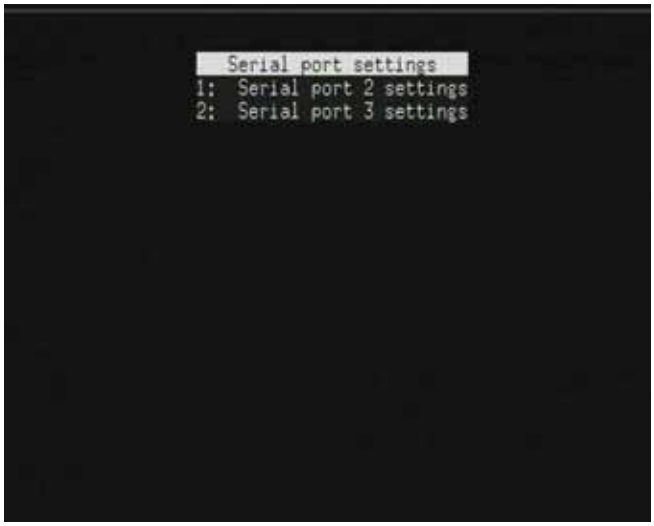
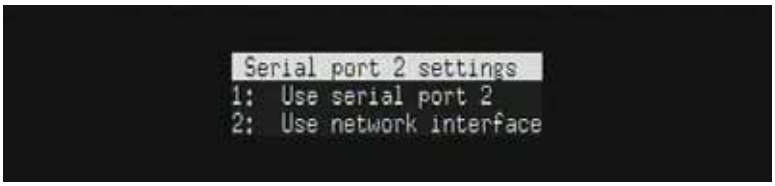

Text size settings (PAL)
1: Small text (69 x 24)
2: Medium text (34 x 19)
3: Large text (32 x 7)
4: Default text (52 x 19)
NOTE: The serial text offset for the associated serial port has been reset to (1, 1).
Press any key to continue

5.7: Serial port settings and LAN set-up

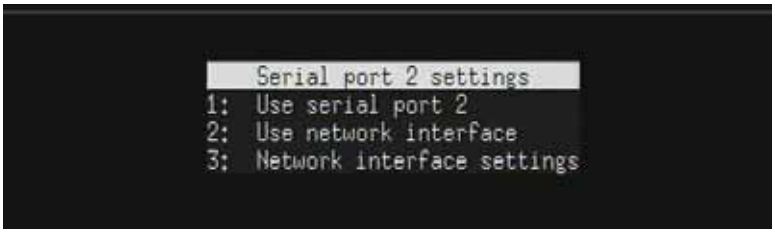


Option 1: Use Serial port 2 or Network Interface



If the LAN option has been purchased, then the LAN interface works as a replacement to Serial Port 2. The user can select to either use Serial Port 2 or the LAN.

Once the second option “Use network interface” has been selected, then a third option “Network interface settings” becomes visible:



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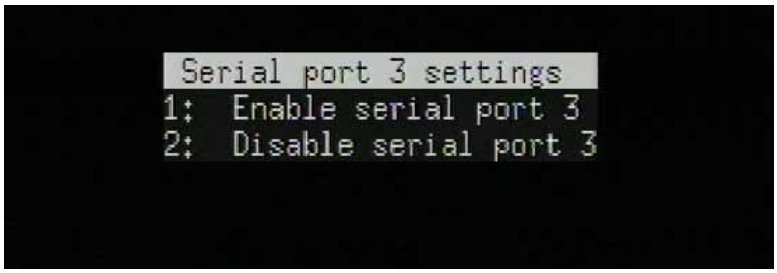
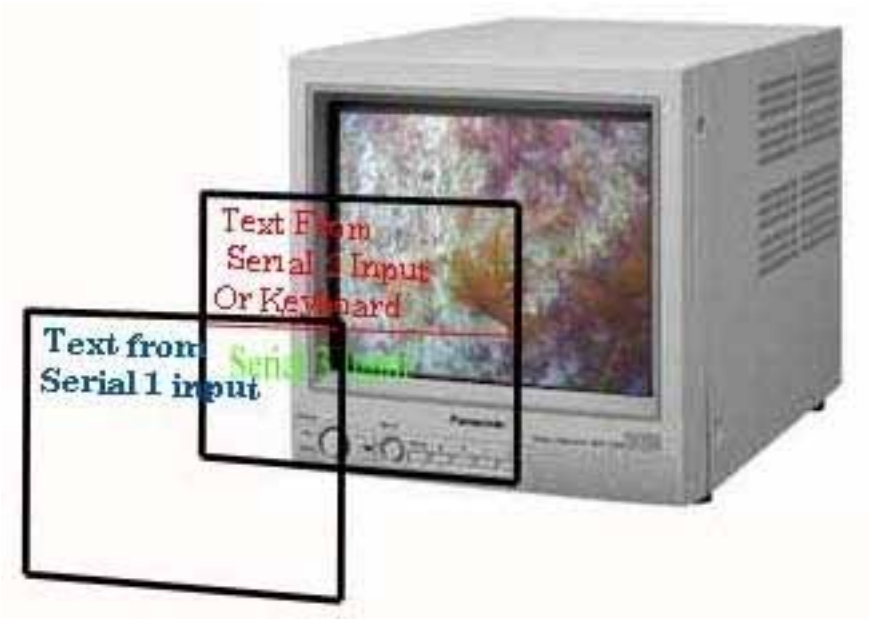
Option 2: Serial port 3 settings

(Note: these settings are visible if the 3rd Serial Port option has been purchased.)



When enabled, data input to serial port 3 will appear on the bottom half of the screen.
Serial port 2 will then be limited to the top half of the screen.



Option 3: Network interface settings

(Note: these settings are visible if the LAN option has been purchased, and the option “Use Network Interface” has been selected in the Serial port 2 settings.)

The user is guided through a series of steps to set up the LAN interface.

Firstly, the user selects the TCP port on which the serial server will operate:

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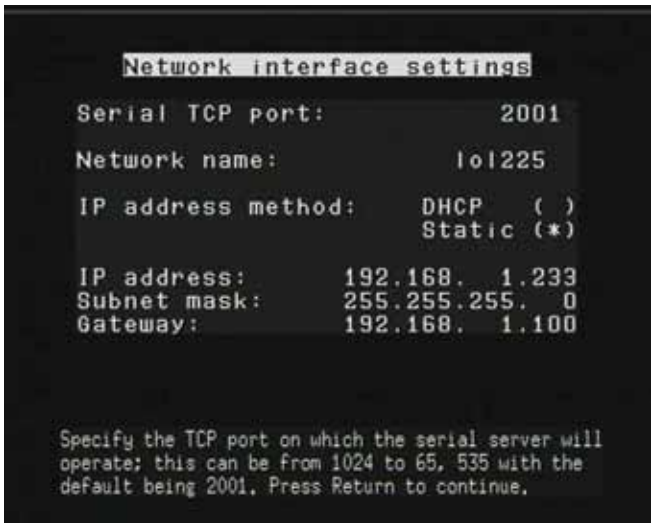
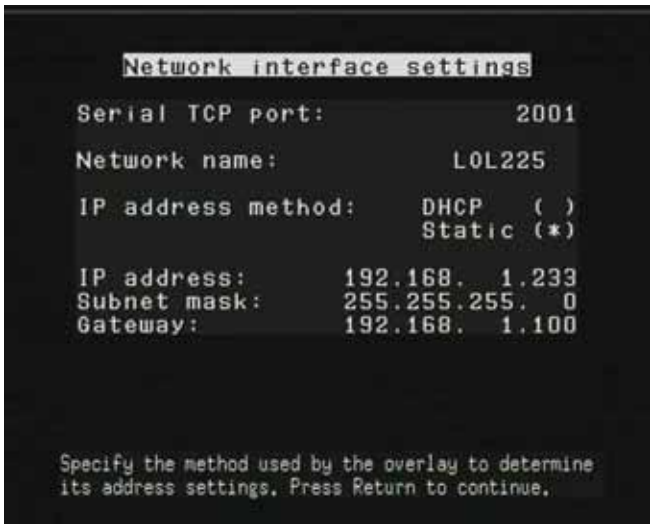

Network interface settings
Serial TCP port: 2001
Network name: lol225
IP address method: DHCP ( )
Static (*)
IP address: 192.168. 1.233
Subnet mask: 255.255.255. 0
Gateway: 192.168. 1.100
Specify the TCP port on which the serial server will operate; this can be from 1024 to 65, 535 with the default being 2001. Press Return to continue.

Secondly, the user specifies the network name for the overlay:

Network interface settings
Serial TCP port: 2001
Network name: lol225
IP address method: DHCP ( )
Static (*)
IP address: 192.168. 1.233
Subnet mask: 255.255.255. 0
Gateway: 192.168. 1.100
Specify the network name for the overlay; do not use any punctuation symbols other than dashes. Press Return to continue.

Then, the user chooses the method used by the overlay to determine its address settings (DHCP or static):


Network interface settings
Serial TCP port: 2001
Network name: LOL225
IP address method: DHCP ( )
Static (*)
IP address: 192.168. 1.233
Subnet mask: 255.255.255. 0
Gateway: 192.168. 1.100
Specify the method used by the overlay to determine its address settings. Press Return to continue.

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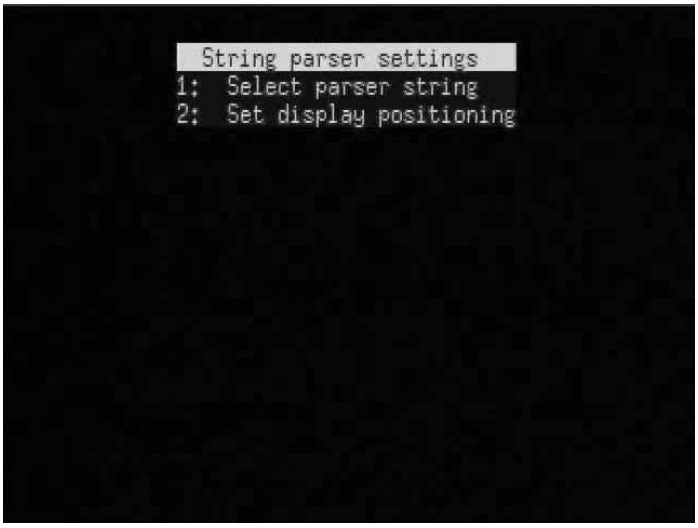
Next, the user specifies the IP settings which will be used by the overlay:

Network interface settings
Serial TCP port: 2001
Network name: L0L225
IP address method: DHCP ( )
Static (*)
IP address: 192.168. 1.33
Subnet mask: 255.255.255. 0
Gateway: 192.168. 1.100
Specify the IP settings which will be used by the overlay. Press Return to continue.

Finally, the user is asked to press Return to accept the changes:

5.8: String parser settings



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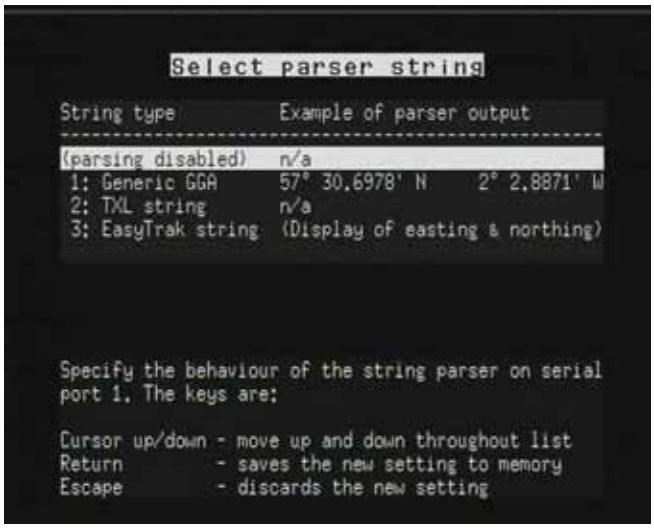
Option 1: Select parser string
NOTE: ***videoTXT*** is able to decode and display some equipment specific strings (GPS units / ROV controllers etc), connected to Serial 1 only. Contact NETmc Marine Support to discuss how to get your equipment on the supported list.


Select parser string
String type
Example of parser output
(parsing disabled)
n/a
1: Generic GGA
57° 30.6978' N
2° 2.8871' W
2: TXL string
n/a
3: EasyTrak string
(Display of easting & northing)
Specify the behaviour of the string parser on serial port 1. The keys are:
Cursor up/down - move up and down throughout list
Return - saves the new setting to memory
Escape - discards the new setting

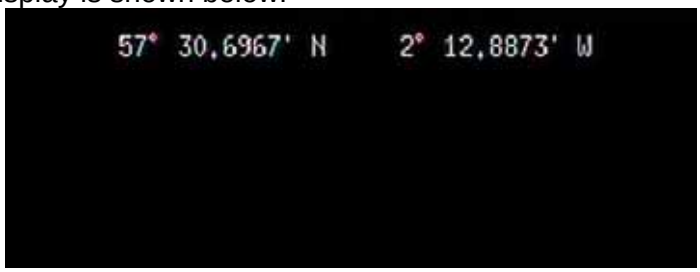
Option 2: Set display positioning

Set display positioning
Display the parsed data on the 1st row of the display, counting from:
the uppermost row (*)
the lowermost row ( )
Tab - cycles the vert. alignment setting
Cursor up/down - adjust the vertical offset setting
Return - saves the new settings to memory
Escape - discards all changes and returns to the String parser settings menu

If you have a GGA compliant GPS signal available, it can be input to serial 1 and enabled using this menu, to display latitude and longitude on screen.

NOTE: GPS data should be 4800,8,N,1)

An example of a GPS display is shown below:



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NOTE: Should the GPS signal disappear for 4 seconds or more the following warning message will appear:

5.9: Analogue interface settings

(Note: these settings are available as an extra option on all models)

In most cases, data is sent to the overlay via a RS232 data link as a string of ASCII characters - but some sensors are not able to generate this type of output. Instead they output a voltage which is relative to the value or status of the sensor. This voltage changes as the status or conditions change.

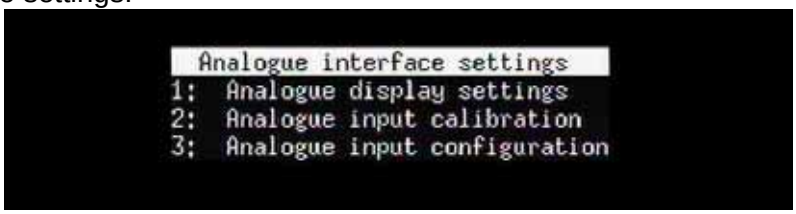
These analogue signals can be interfaced to the ***VideoTXT*** by means of the optional 4-channel analogue to digital converter (ADC) board. Each channel is separately configurable for scaling, voltage offset and screen position and can be labelled with a descriptor and unit.

Input 1 (referred to as CP) has a precision isolation amplifier fitted, allowing the measurement of signals with floating ground - which is particularly suitable for any application where there is a risk of erroneous voltages, e.g. CP measurements. The isolation also gives the circuits a level of protection from over voltage (up to 1000v) and short circuit.

Inputs 2-4 share a common reference, e.g. ground - or a 0V line, and are protected to around 50v.

The following sections explain the menu options, concluding with a worked example for reference.

To access the relevant menu, from the menu screen (press F1 while in scratch mode), select option 8: Analogue interface settings:



5.9.1 Analogue display settings

This screen allows you to choose which of the 4 channels should be displayed on screen, and to set the maximum voltage values for each channels.

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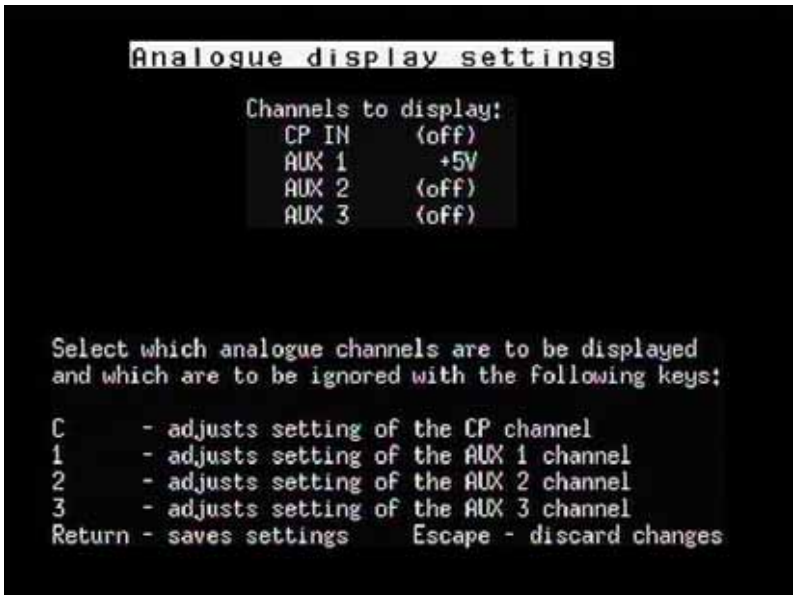
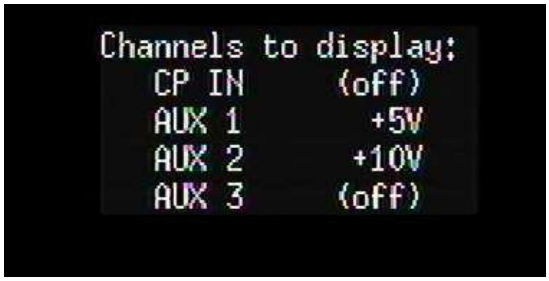

Analogue display settings
Channels to display:
CP IN (off)
AUX 1 +5V
AUX 2 (off)
AUX 3 (off)
Select which analogue channels are to be displayed
and which are to be ignored with the following keys:
C - adjusts setting of the CP channel
1 - adjusts setting of the AUX 1 channel
2 - adjusts setting of the AUX 2 channel
3 - adjusts setting of the AUX 3 channel
Return - saves settings
Escape - discard changes

For each channel, select the maximum voltage value that might be applied to the analogue input to give you a full scale reading from the analogue to digital converter. There are 3 different input ranges: 0 to +2.5V, 0 to +5V and 0 to +10V.
The channels are controlled by the keys described on the screen, so key “C” switches on the CP channel, whilst key “1” switches on Channel 1. Furthermore, the same key toggles through each of the voltage settings. For example, in a new machine the display settings will appear as shown in the example above. Press C once to display the CP channel with +2.5V, press C again to select +5V, C again to select +10V. Similarly, press 1 repeatedly to toggle between the voltage options for channel AUX 1; press 2 repeatedly to toggle through the options for channel AUX 2 and so on.

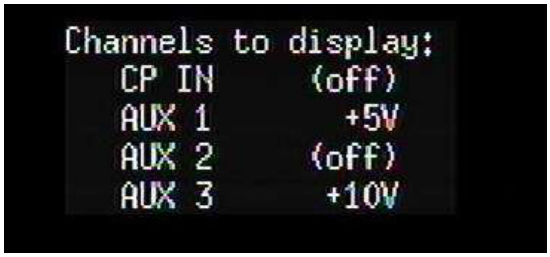
It is possible to have any combination of the channels selected (including none or all of the channels).

Example with CP and channel 1 selected

Example with no channels selected



Example with channels 1 and 2 selected



Example with channels 1 and 3 selected.

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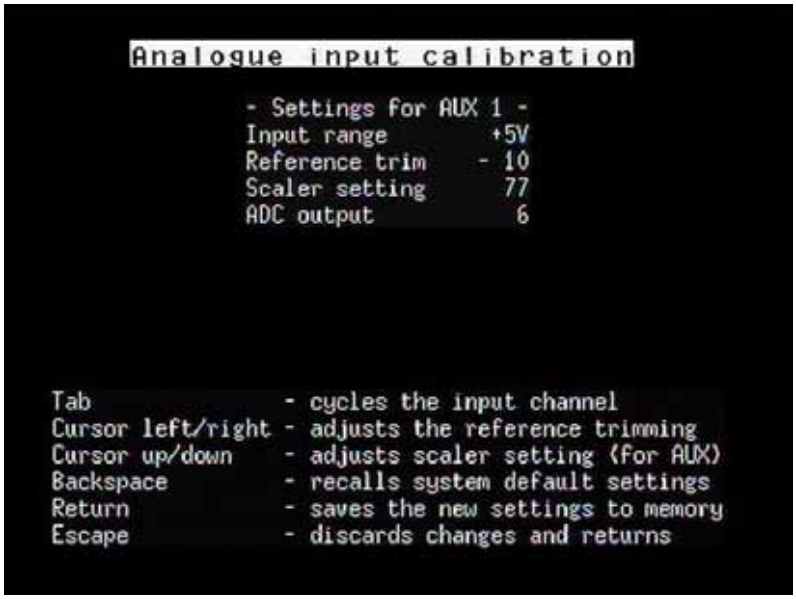
5.9.2 Analogue input calibration

Note: The factory default settings will give sensible outputs and can be left as they are.

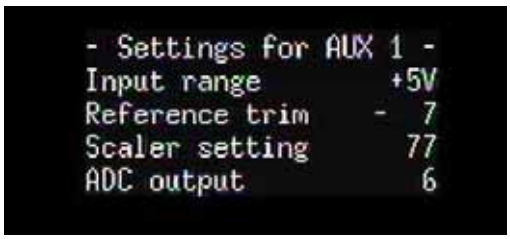
For advance users who wish to fine-tune the calibration:
This sub-menu allows the user to set the A-D converter so that the full scale output of the A-D corresponds to the full scale input voltage applied to the unit. This is done by changing the values for each channel so that the ADC uses all 4095 available levels.

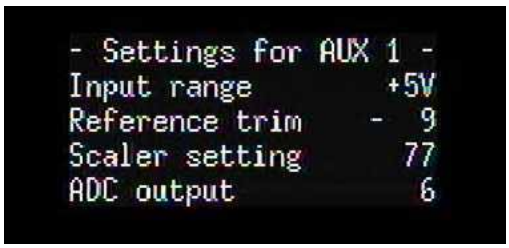
The default settings can be retrieved at any time by pressing the Backspace key. Press ENTER to accept these options. Press ESC to return to the settings set by the user.

Note: This option can only be selected for those channels which have already been selected under option 8.1 Analogue Display Settings. The input range displayed is that which was selected on the Display Settings page.


Analogue input calibration
- Settings for AUX 1 -
Input range +5V
Reference trim - 10
Scaler setting 77
ADC output 6
Tab - cycles the input channel
Cursor left/right - adjusts the reference trimming
Cursor up/down - adjusts scaler setting (for AUX)
Backspace - recalls system default settings
Return - saves the new settings to memory
Escape - discards changes and returns

Examples:





Reference trim
This is used to fine tune the output of the A-D converter after setting the Scaler setting. However, before making any adjustments the reference trim should be set to ZERO. In order to increase the reading from the system towards 4094 the reference trim needs to be adjusted DOWN. If an over-range warning appears, the reference trim should be adjusted UPWARDS.

Scaler setting
This is used to tune the output of the A-D converter, so that the maximum analogue voltage you intend to apply corresponds with the maximum scale on the converter. The biggest number the A-D outputs is 4095. When you change input range, the scaler setting is automatically changed so that the maximum voltage input of that range equates to an A-D output of 4095, e.g. on 0->5v range, 5 volts = 4095. If the largest signal you will ever apply is 4 volts, you still need to be on the 0->5v

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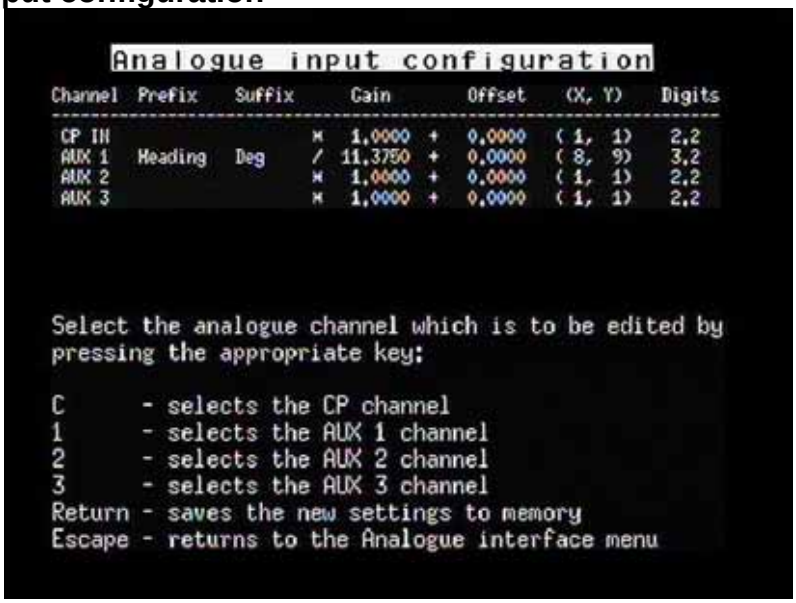
range, but it would be desirable to adjust the scaling so that 4v equates to 4095, so you get the full range and accuracy available.
The scaler setting should be adjusted to close to, but not exceeding 4094 (else an over-range warning will show.) E.g. after using the scaler settings, the A-D output may be 4093 – adjusting the reference trim downwards will bring it up to 4094. Note: If set to 4095 the system cannot distinguish between this and an over-range so only go up to 4094.

The scaler setting option is not available on the CP channel.

ADC output
This shows the raw value that is being returned by the converter.

Press the ENTER key to save the settings.
Then select ESC to return to the analogue menu.

5.9.3 Analogue input configuration


Analogue input configuration
Channel Prefix Suffix Gain Offset (X, Y) Digits
CP IN × 1,0000 + 0,0000 (1, 1) 2,2
AUX 1 Heading Deg / 11,3750 + 0,0000 (8, 9) 3,2
AUX 2 × 1,0000 + 0,0000 (1, 1) 2,2
AUX 3 × 1,0000 + 0,0000 (1, 1) 2,2
Select the analogue channel which is to be edited by pressing the appropriate key;
C - selects the CP channel
1 - selects the AUX 1 channel
2 - selects the AUX 2 channel
3 - selects the AUX 3 channel
Return - saves the new settings to memory
Escape - returns to the Analogue interface menu

The analogue input configuration screen allows you to set up the parameters, as you want to see them on screen. The prefix, suffix, gain, offset, (x,y) and digits before and after the decimal point can all be adjusted.

For example to adjust the configuration of the Channel Aux 1, press the “1” key. The cursor appears in the Prefix field. Any text can be entered here. Press “Enter” and the cursor moves to the Suffix field. Again any text can be entered. Press “Enter” again and the cursor enters the */ field. Tab between the * (multiply) and / (divide options). Press “Enter” to advance to the next field, and so on.

Gain
The gain specifies a value in which the value from the A to D converter will be either multiplied or divided by in order to give a more meaningful display. For example the output will always be in the range 0 to 4095. However if degrees are being measured, the result should be in the range 0 to 360. In this case the gain should be set to “/ 11.375” (as shown in the example above.) Then an output of 4095 will be displayed as 360.

Offset
The offset will be is added or subtracted to the new value received after the gain adjustment.
An offset might be used for example if voltage is being measured: to display values in the range -2.5 to +2.5 (instead of 0 to 5) an offset of -2.5 would be entered.

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(X,Y)
This sets the position of the display on screen

Channel	Prefix	Suffix		Gain		Offset	(X, Y)	Digits
CP IN			*	1,0000	+	0,0000	(1, 1)	2,2
AUX 1	Heading	Deg	/	11,3750	+	0,0000	(8, 9)	3,2
AUX 2			*	1,0000	+	0,0000	(1, 1)	2,2
AUX 3			*	1,0000	+	0,0000	(1, 1)	2,2

In the example above, display settings for channel AUX 1 are displayed on screen, in the position of X=8, Y =9.
The text displayed for an output of 4095 would be:

Heading 360.00 Deg

Channel	Prefix	Suffix		Gain		Offset	(X, Y)	Digits
CP IN	CP		*	1,0000	+	0,0000	(1, 1)	2,2
AUX 1	Heading	Deg	/	11,3750	+	0,0000	(8, 9)	3,2
AUX 2			*	1,0000	+	0,0000	(1, 1)	2,2
AUX 3			*	1,0000	+	0,0000	(1, 1)	2,2

In the example above, display settings for channel AUX 1 and for the CP channel are displayed on screen. The CP is shown in the top left corner, the AUX 1 channel readings in the position of X=8, Y =9.

Example A-D setup procedure

An ROV has a gyro compass system which outputs a voltage between 0 and 3.6 volts, which relates to 0 - 360 degrees of vehicle heading.

1) Select which input to use. It is a low risk input (not requiring the isolation of the CP input) so use first available AUX pair.
2) Open Analogue Display Settings menu. As max voltage is 3.6, the 0->5v range must be used. Set the range for AUX1 to +5V.
3) Open the Analogue Input Calibration menu.
4) Hit 'backspace' to clear any previous setups and take the figures back to defaults.
5) Set compass to output its maximum value (or simulate using bench supply)
6) Adjust the scaler settings so that raw ADC output is as close as possible to but not exceeding 4095. If you over adjust, the A-D output will become saturated and the 'over range' warning will be displayed.
7) Use the reference trim to fine tune the output to be 4095.
8) Hit return to save the settings, then open the Analogue Input Configuration menu.
9) Use the Gain setting to multiply the 3.6 volts by 100 to give the 360 required
10) A prefix of "Heading" can be added
11) A suffix of "Degrees" can be added
12) Use the digits setting to set the number of decimal places - 3,2 gives 180.00
13) Use x/y to position the information on the screen.

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Pinout Diagram

9way D-type female on rear panel

Pin	Function
1	CP +ve
2	CP -ve
3	Aux1 +ve
4	Aux1 0v
5	Aux2 +ve
6	Aux2 0v
7	Aux3 +ve
8	Aux3 0v
9	General Ground

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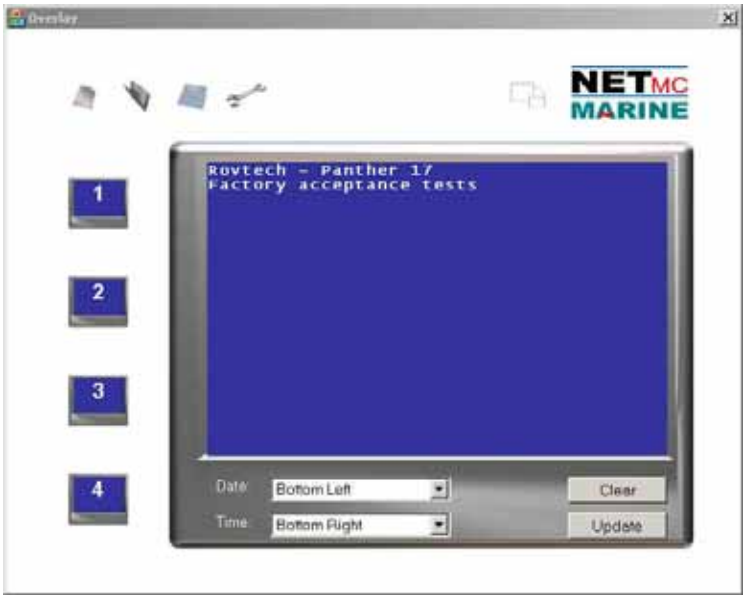
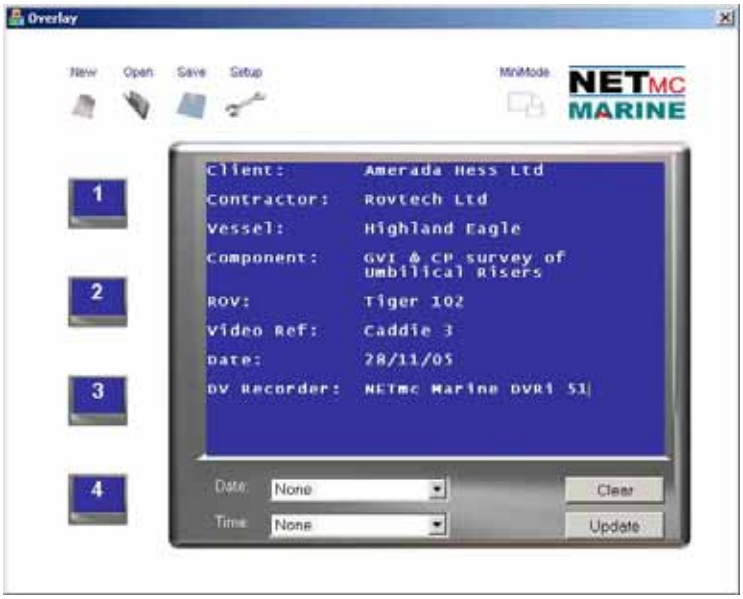
6. Overlay Manager

The ***videoTXT*** is shipped with NETmc Marine's Overlay Manager software, which can be used to control the overlay remotely from a PC connected to the overlay's serial port. The software is also available as a download from our website www.netmcmarine.co.uk. This software can be installed on any PC with a serial port.

Overlay Manager allows the time/date to be generated from the PC – which may make it easier to synchronise clocks. It also allows the user to type-set his page of text before actually seeing it displayed on the video screen which can be very useful if the video is being recorded live.

Overlay manager also allows multiple screens of data to be configured and toggled between – e.g. header pages and normal running page. Additionally, all the pages can be saved to disk – so operators can have sequences of custom pages saved on disk for each client – saving editing or retyping between jobs.





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7. Troubleshooting

Symptom: Text not stable / appearing to move up and down screen.

Cause: Poor video input signal
Some element of the video signal must be out-of-spec, e.g. peak-peak voltage, DC offset, sync pulse etc.

VCR footage
Stablility can also be an issue if trying to apply overlay to footage acquired on a VCR.

Cure: Clean up the signal – check for bad connections, double terminations. If possible use a time base corrector.
An isolation transformer may be desirable – especially Seaeye ROVs benefit greatly from an in-line isolation transformer.

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8. Definition of Terms

PAL: Video encoding system typically used in UK, Europe, Australia and parts of Africa and Asia

NTSC: Video encoding system typically used in USA, Canada.

Scratch page: Text is displayed on the screen as typed into the keyboard. This is the default screen obtained upon first powering up the unit. Text is lost if any other command is carried out.

Channel titles: Short title which can be displayed on each video channel in use (eg Diver1, Diver2 etc)

GPS: Global Positioning System. U.S. space-based global navigation satellite system, which provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night.

NMEA: National Marine Electronics Association. They issue protocol on the relay of GPS signals.

Parsing: Interpretation or translation of code.

Overscan: Area around the edge of a screen which may not be visible on some monitors. See section 5.3.

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9. How to contact NETmc Marine Support

Should any problems occur with your ***videoTXT*** that are not addressed by this manual please contact our Support Team:

Email: support@netmcmarine.co.uk.

Tel: +44 1771 644001

Should your call be outside office hours, please leave a message on the answering machine, which will be forwarded to one of the support engineers. Although we cannot guarantee 24/7 availability, we endeavour to respond as quickly as possible to any query – regardless of when the support call is made.

Notes:

1. Whilst every effort has been made to ensure that the information contained in this manual is accurate, no liability can be accepted for errors and omissions.

2. Should this product be modified in any way by anyone other than a qualified NETmc Marine employee, then NETmc Marine cannot be held liable for any consequences.

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Appendix 1: Technical Specifications

Power Requirements	100 - 240 Vac, 47-63 Hz
Power Consumption	5 watt
Operating Temperature	10 - 35 Degrees
Non-operating Temperature	-10 - 60 Degrees
Operating Humidity	5-95% RH non-condensing
Non-operating Humidity	5-95% RH non-condensing
Operating Shock	250G, 2ms
Non-operating Shock	500G, 2ms
Operating Altitude	-305m – 3,050m
Non-operating Altitude	-305m – 12.200m
Operating Vibration	Linear 20-300Hz, 0.75G (0 to peak) Random 10-300 Hz, 0.004g2/Hz
Non-operating Vibration	Low frequency 5-20 Hz, 0.195 inches (double amplitude) High frequency 10-300Hz, 5.0G (0 to peak)
Dimensions	482(W) x 41(H) x 155(D) (1U case)
Weight	3kg
Video Input	Composite (BNC) / PAL / NTSC

Storage and Shipping

After overnight road freight the unit should be left at room temperature for 5 hours before powering on.

After air freighting the unit should be left at room temperature for 10 hours before powering on.

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Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

End of Document

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